REMARKS

Claims 1, 2 and 4-11 are pending in this application. By this Amendment, claims 1, 2 and 6 are amended.

I. Claim Rejections Under 35 U.S.C. §102

Claims 1 and 9 are rejected under 35 U.S.C. §102(a, b) as being anticipated by Japanese Patent No. 05-175536 to Taguchi et al. (hereinafter "Taguchi"). Specifically, the Office Action asserts that Taguchi (Fig. 8) discloses a diode with a p-type silicon layer (4) containing germainium and an n-type silicon layer (6) junctioned to the p-type silicon layer (4). Additionally, the Office Action asserts that the n-type silicon layer (6) is disposed on an insulating substrate (1a). Applicant respectfully traverses the rejections.

Taguchi does not disclose, teach or suggest a semiconductor device, comprising: a diode, including: an insulating substrate; a p-type silicon layer, the p-type silicon layer containing germanium, and being disposed on the insulating substrate; and a n-type silicon layer junctioned to the p-type silicon layer and the n-type silicon layer being disposed on the insulating substrate (present invention Fig. 2B). Instead, Taguchi teaches (Figs. 8A-B) the SiGe layer (1C) disposed on the Si (1B) layer which is disclosed on the substrate (1A). Therefore, there is nothing in Taguchi that teaches or suggests the p-type silicon layer being disposed on the insulating substrate and a n-type silicon layer junctioned to the p-type silicon layer and the n-type silicon layer being disposed on the insulating substrate.

Based on the arguments presented above independent claim 1 is in condition for allowance. Dependent claim 9 depends directly from independent claim 1 and therefore is also in condition for allowance. It is respectfully requested that the Examiner reconsider and withdraw the rejection.

Claims 2, 7, 10 and 11 are rejected under 35 U.S.C. §102(a, b) as being anticipated by Taguchi. Applicant respectfully traverses the rejections.

Based on the arguments presented above, independent claim 2 is in condition for allowance. Dependent claims 7, 10 and 11 depend directly, or indirectly, from independent claim 2 and therefore are also in condition for allowance. It is respectfully requested that the Examiner reconsider and withdraw the rejections.

II. Claim Rejections Under 35 U.S.C. §103

Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Taguchi as applied to claim 1 and further in view of U.S. Patent No. 2003/0071291 A1 to Beasom (hereinafter "Beasom") and further in view of U.S. Patent No. 6,055,460 to Shopbell (hereinafter "Shopbell") and further in view of U.S. Patent No. 6,187,684 B1 to Farber et al. (hereinafter "Farber"). Claims 1, 4, 5 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 2003/0197598 A1 to Hayashi (hereinafter "Hayashi") in view of Taguchi and further in view of U.S. Patent No. 2003/0137284 A1 to DiPiazza (hereinafter "DiPiazza") and further in view of Streetman ("Solid State Electronic Devices," p. 205) (hereinafter "Streetman"). Additionally, claims 2, 7, 8, 10 and 11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hayashi in view of Taguchi and further in view of DiPiazza and further in view of Streetman. Applicant respectfully traverses the rejections.

With respect to claim 6, the Office Action asserts that Taguchi discloses a diode with a p-type silicon layer (4) containing germanium in an n-type silicon layer (6) junctioned to the p-type silicon layer (4). The Office Action acknowledges that Taguchi does not disclose forming the silicon-germanium mixed crystal by implanting a germanium to the p-type silicon layer. The Office Action goes on to assert that Beasom discloses that using ion implantation in order to form silicon germanium is a known method in the art. Additionally, the Office Action asserts that Shopbell discloses that ion implantation has the benefit of taking place in a clean environment. Additionally, that Farber discloses that fabrication in a clean environment is desired in a semiconductor art. The Office Action summarizes by asserting that in view of

Beasom, Shopbell and Farber, it would be obvious to utilize ion implantation as the means of forming the silicon-germanium mixed crystal. We respectfully traverse the rejections.

Referring specifically to claims 1, 4, 5 and 9, the Office Action asserts that Hayashi discloses a semiconductor device with a bridge rectifier circuit having the plurality of diodes. The Office Action goes on to acknowledge how Hayashi does not disclose the use of a diode which uses a p-type silicon layer containing germanium and an n-type silicon layer junctioned to the p-type silicon layer with n-type junction layer disposed on an insulating substrate. Therefore, the Office Action asserts that Taguchi discloses a pin diode with a p-type silicon layer containing germanium and an n-type silicon layer junctioned to the p-type silicon layer; the n-type silicon layer disposed on an insulating substrate. The Office Action then goes on to assert that DiPiazza states that pin diodes are known to have a fast switching time. Additionally, the Office Action asserts that Streetman states that diodes with a fast switching speed are desirable in the art. Therefore, the Office Action asserts that in view of DiPiazza and Streetman, it would be obvious to implement a Taguchi diode in a bridge rectifier circuit of Hayashi.

Regarding claims 2, 7, 8, 10 and 11, the Office Action asserts that Hayashi discloses a semiconductor device with a bridge rectifier circuit having a plurality of diodes. The Office Action goes on to acknowledge that Hayashi does not disclose the use of a diode which uses a p-type silicon layer containing germanium and an n-type silicon layer junctioned to the p-type silicon layer with n-type junction layer disposed on an insulating substrate. The Office Action goes on to assert that Taguchi discloses a pin diode with a p-type silicon layer containing germanium. Furthermore, the Office Action asserts that DiPiazza states that pin diodes are known to have a fast switching time and that Streetman states that diodes with a fast switching speed are desirable in the art. The Office Action then asserts that in view of

DiPiazza and Streetman it would be obvious to implement a Taguchi diode in a bridge rectifier circuit of Hayashi. We respectfully traverse the assertions.

Taguchi does not teach, disclose or suggest the semiconductor device, comprising: a diode, including: an insulating substrate; a p-type silicon layer, the p-type silicon layer containing germanium, and being disposed on the insulating substrate; and a n-type silicon layer junctioned to the p-type silicon layer and the n-type silicon layer being disposed on the insulating substrate. Instead, Taguchi teaches (Figs. 8A-B) the SiGe layer disposed on the Si layer which is disposed on the substrate. Therefore, there is nothing in Taguchi that teaches the present invention. Based on the arguments presented above, independent claims 1, 2 and 6 are in condition for allowance. Dependent claims 4, 5 and 7-11 depend either directly, or indirectly, from independent claims 1, 2 and 6. Therefore, the dependent claims are also in condition for allowance. It is respectfully requested that the Examiner reconsider and withdraw the rejections.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2 and 4-11 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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